

FIG. 1

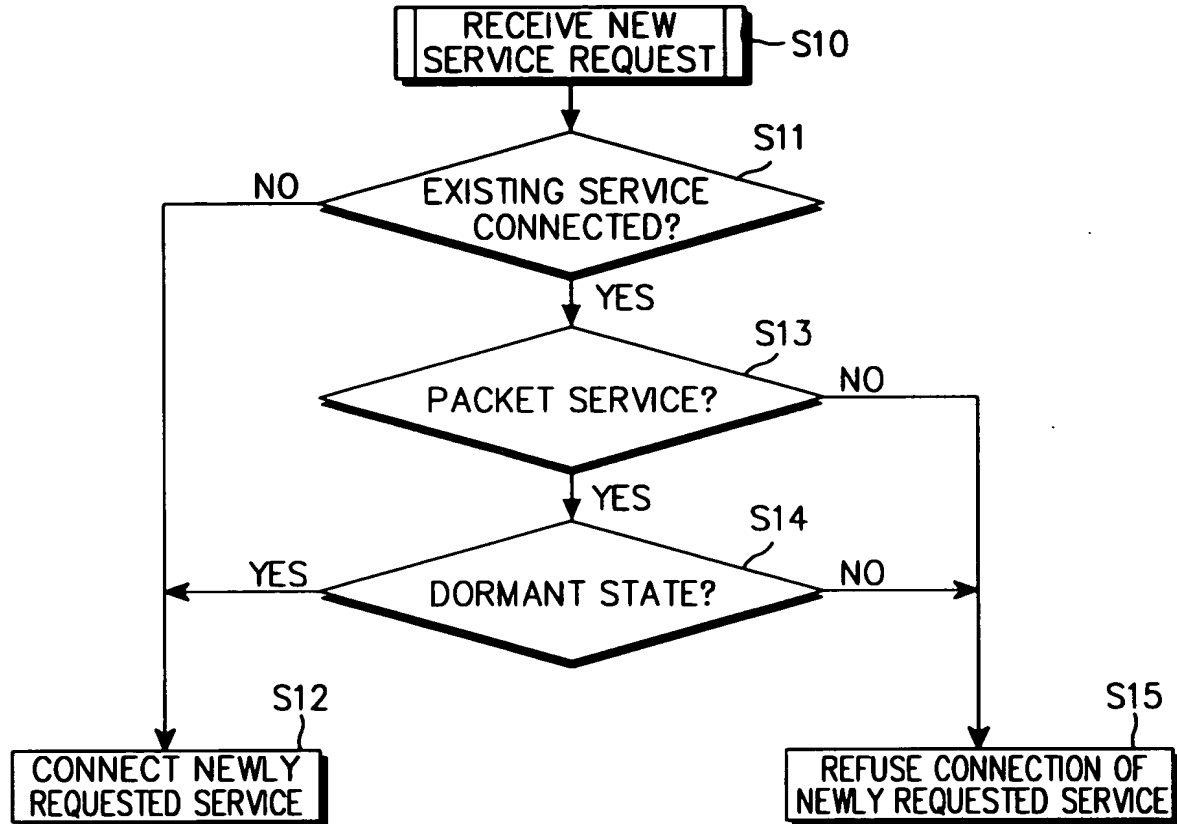
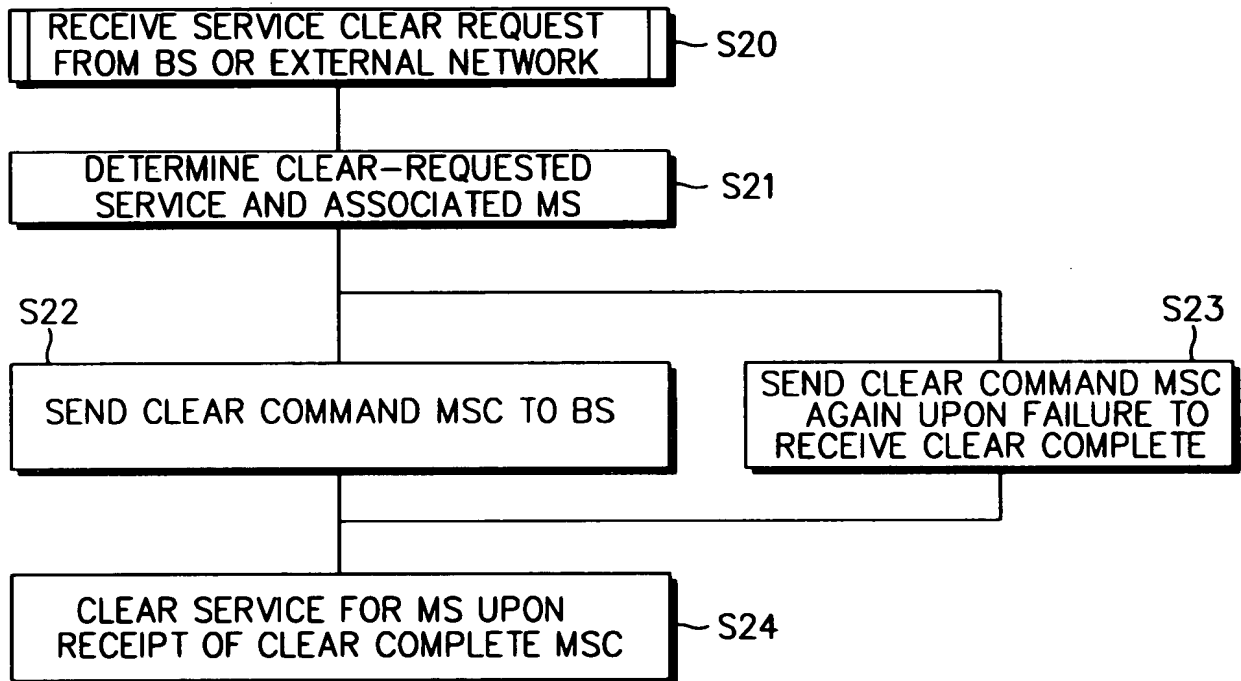


FIG. 2  
(PRIOR ART)



**FIG. 3**  
**(PRIOR ART)**

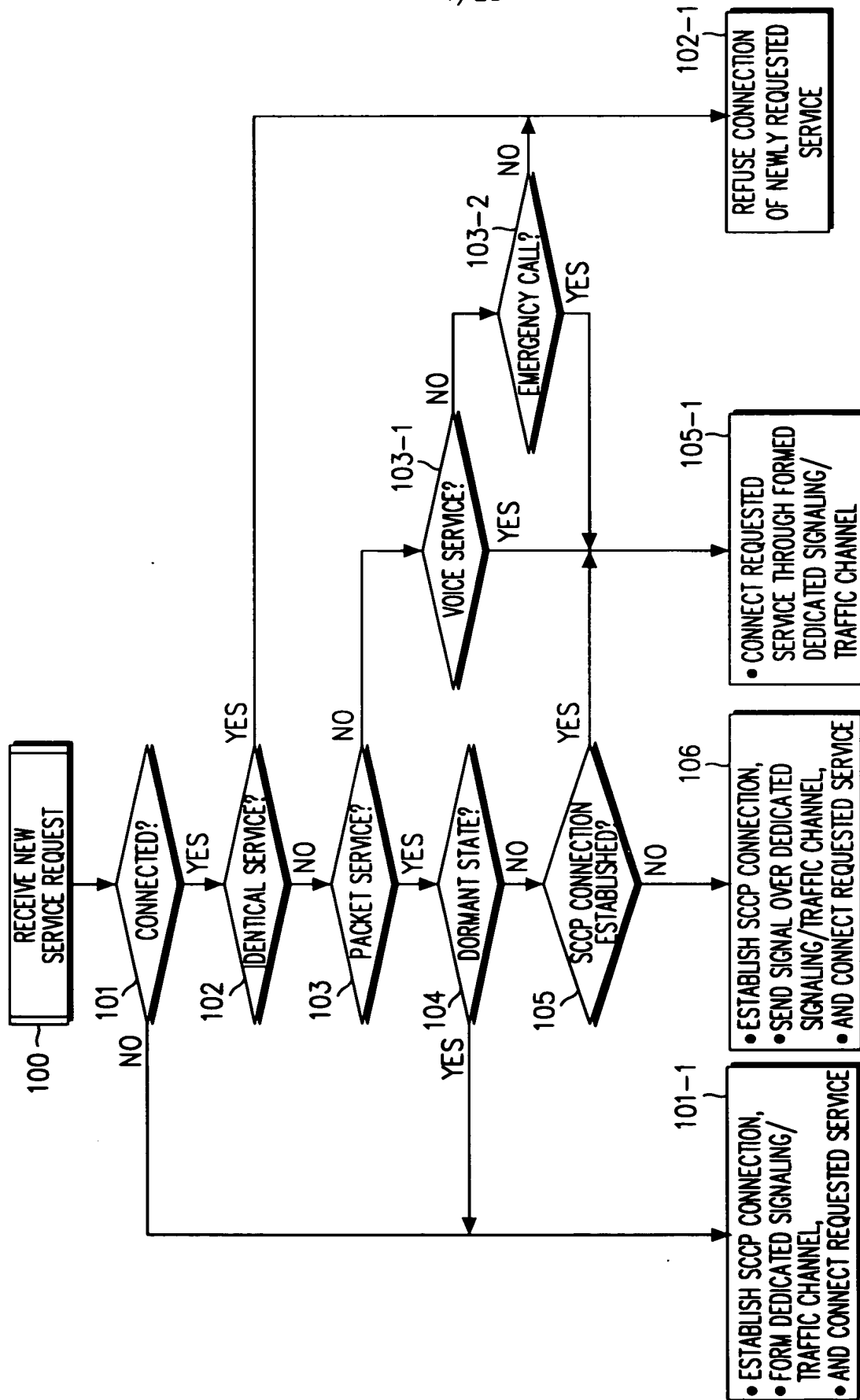


FIG. 4

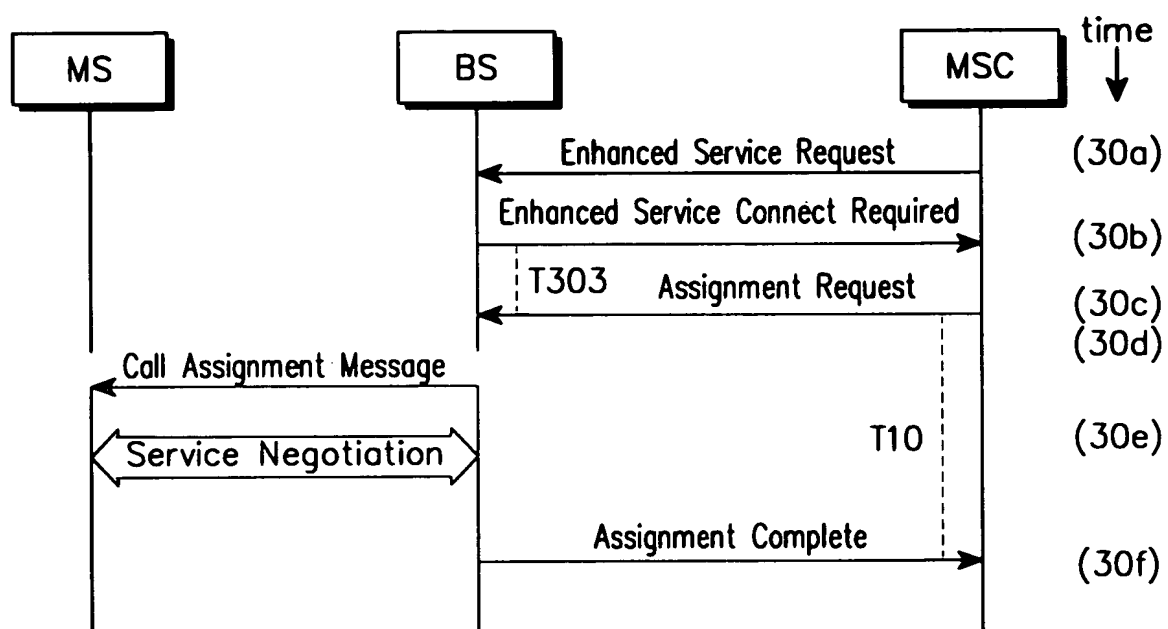


FIG. 5A

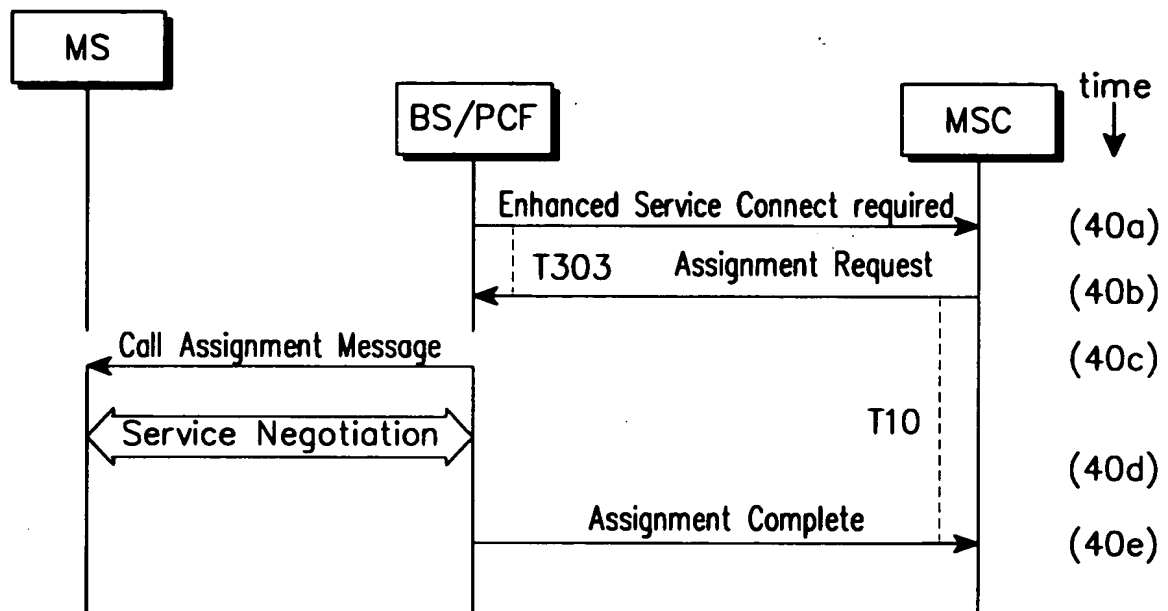


FIG. 5B

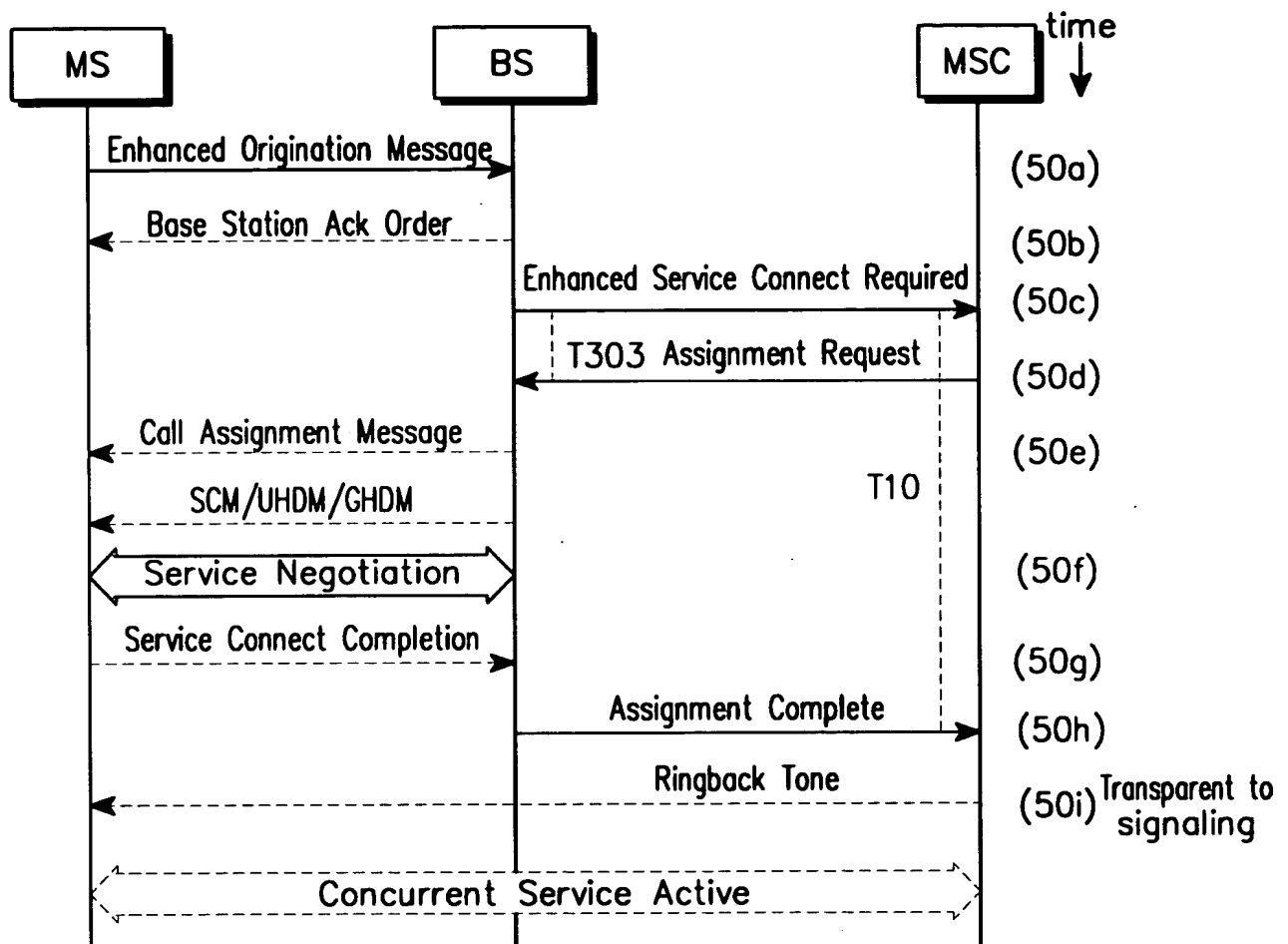


FIG. 5C

Information Element
Message Type
Mobile Identity(IMSI)
Mobile Identity(ESN)
Service Option

FIG. 6



7	6	5	4	3	2	1	0	Octet
BSMAP Header: Message Discrimination=[00H]								1
Length Indicator(LI)= <b>&lt;variable&gt;</b>								2
Message Type=								1
Mobile Identity(IMSI):           Length=[06H-08H](10-15digits)								1
Identity Digit 1=[0H-9H](BCD)				Odd/even Indicator =[1,0]	Type of Identity =[110] (IMSI)			2
Identity Digit 3=[0H-9H](BCD)				Identity Digit 2=[0H-9H](BCD)				3
. . .								
Identity Digit N+1=[0H-9H](BCD)				Identity Digit N=[0H-9H](BCD)				n
=[1111](if even number of digits)				Identity Digit N+2=[0H-9H](BCD)				n+1
Mobile Identity(ESN):           A1 Element Identifier=[0DH]								1
Length=[05H]								2
Identity Digit 1=[0000]				Odd/even Indicator =[0]	Type of Identity =[101] (ESN)			3
(MSB)								4
ESN= <b>&lt;any value&gt;</b>								5
								6
							(LSB)	7
Service Option:           A1 Element Identifier=[03H]								1
(MSB)	Service Option=							2
							(LSB)	3

FIG. 7

Information Element
Protocol Discriminator
Reserved – Octet
Message Type
CM Service Type
Mobile Identity(IMSI)
Called Party BCD Number
Mobile Identity(ESN)
Service Option
Voice Privacy Request
Radio Environment and Resources
Called Party ASCII Number
Circuit Identity Code

FIG. 8

7	6	5	4	3	2	1	0	Octet
DTAP Header: Message Discrimination=[01H]								1
Data Link Connection Identifier(DLCI)								2
Length Indicator(LI)								3
Reserved=[0000]				Protocol Discriminator (Call Processing including Concurrent Service processing & Supplementary Services)				1
Reserved-Octet=[00H]								1
Message Type=[24H]								1
CM Service Type: A1 Element Identifier				Service Type				1
Mobile Identity(IMS):Length=[06H-08H](10-15digits)								1
Identity Digit 1=[0H-9H](BCD)				Odd/even Indicator =[1,0]	Type of Identity =[110] (IMS)			2
Identity Digit 3=[0H-9H](BCD)				Identity Digit 2=[0H-9H](BCD)				3
. . .								. . .
Identity Digit N+1=[0H-9H](BCD)				Identity Digit N=[0H-9H](BCD)				n
=[1111](if even number of digits)				Identity Digit N+2=[0H-9H](BCD)				n+1
Called Party BCD Number: A1 Element Identifier=[5EH]								1
Length=[00H-11H]								2
= [1]	Type of Number =[000-111]			Number Plan Identification =[0000-1111]				3
Number Digit/End Mark 2=[0000-1111]				Number Digit/End Mark 1=[0000-1111]				4
Number Digit/End Mark 4=[0000-1111]				Number Digit/End Mark 3=[0000-1111]				5
. . .								. . .
Number Digit/End Mark m+1=[0000-1111]				Number Digit/End Mark m=[0000-1111]				n

FIG. 9A

7	6	5	4	3	2	1	0	Octet						
Mobile Identity(ESN): A1 Element Identifier=[0DH]								1						
Length=[05H]								2						
Identity Digit 1=[0000]				Odd/even Indicator=[0]	Type of Identity=[101] (ESN)			3						
(MSB)	ESN=<any value>							4						
								5						
								6						
								7						
								(LSB)						
Service Option: A1 Element Identifier=[03H]								1						
(MSB)	Service Option=<any value>							2						
								(LSB)	3					
Voice Privacy Request: A1 Element Identifier=[A1H]								1						
Radio Environment and Resources: A1 Element Identifier=[1DH]								1						
Reserv ed=[0]	Include Priority=[0,1]	Forward=[00]		Reverse=[00]		Alloc=[0,1]	Avail=[0,1]	2						
Called Party ASCII Number: A1 Element Identifier=[5BH]								1						
Length=<variable>								2						
ext=[1]	Type of Number=[000-111] (as in T1,607 sec 4.5.9)			Number Plan Identification=[0000-1111] (as in T1,607 sec 4.5.9)				3						
ASCII character 1								4						
ASCII character 2								5						
. . .								. . .						
ASCII character n								n						
Circuit Identity Code: A1 Element Identifier=[01H]								1						
(MSB)	PCM Multiplexer=<any value>							2						
		(LSB)	Timeslot=[00000-11111]					3						

FIG. 9B

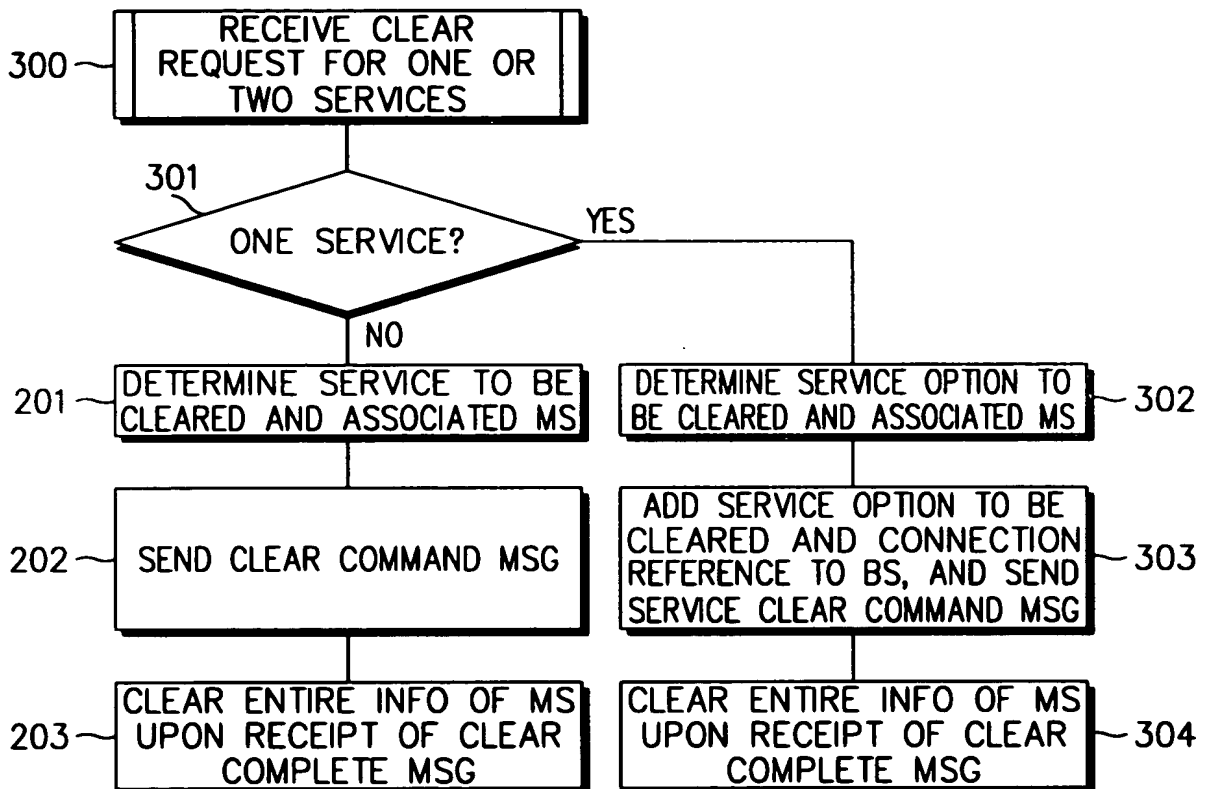


FIG. 10

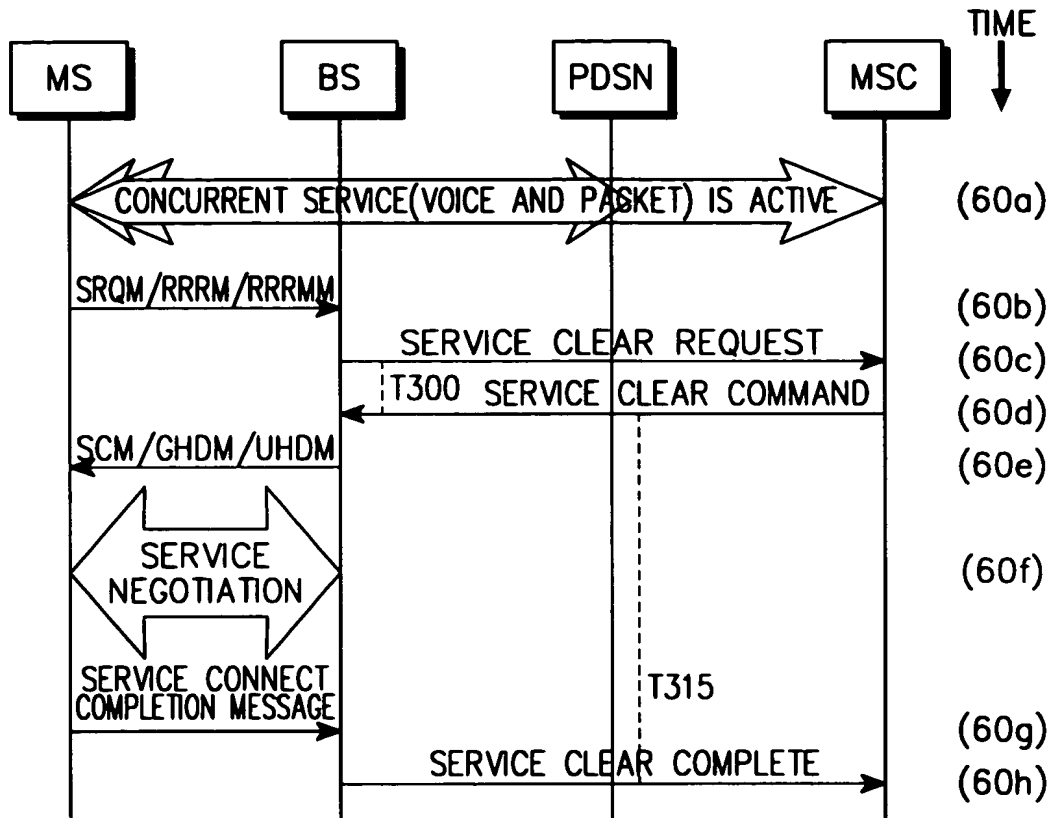


FIG. 11A

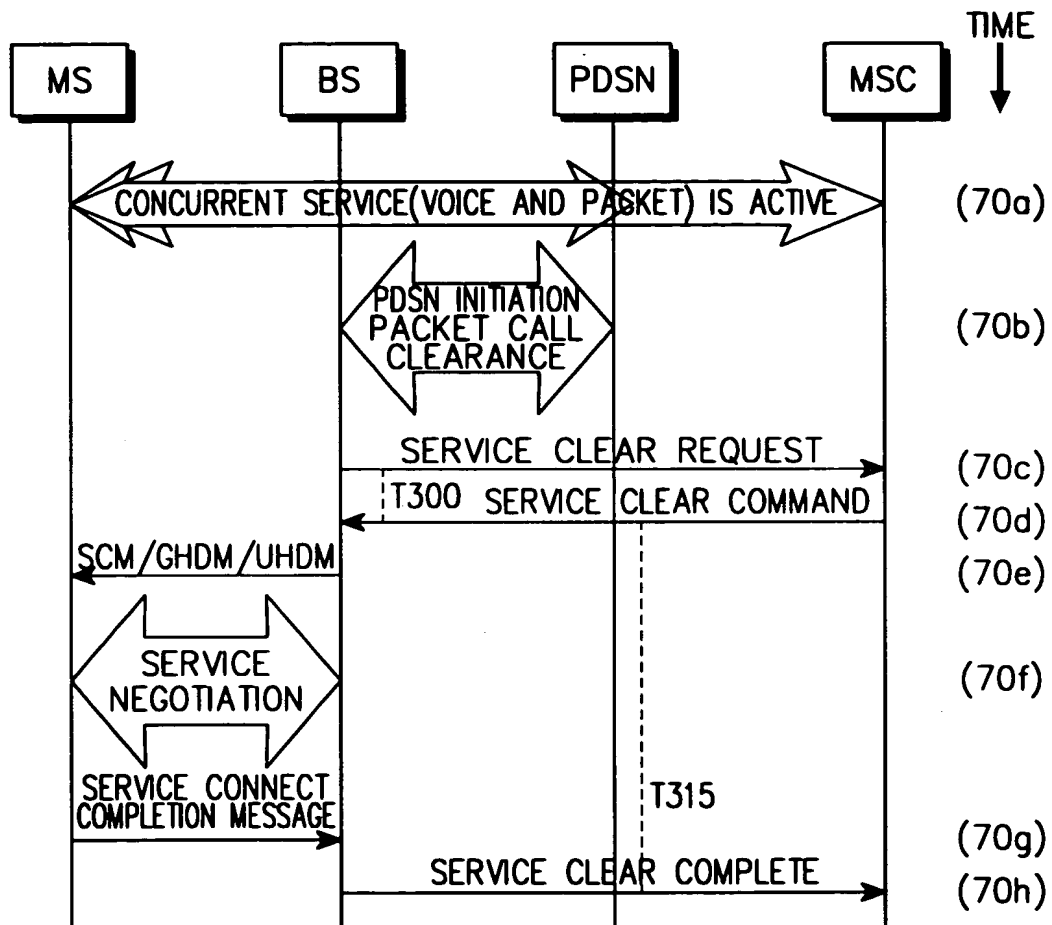


FIG. 11B

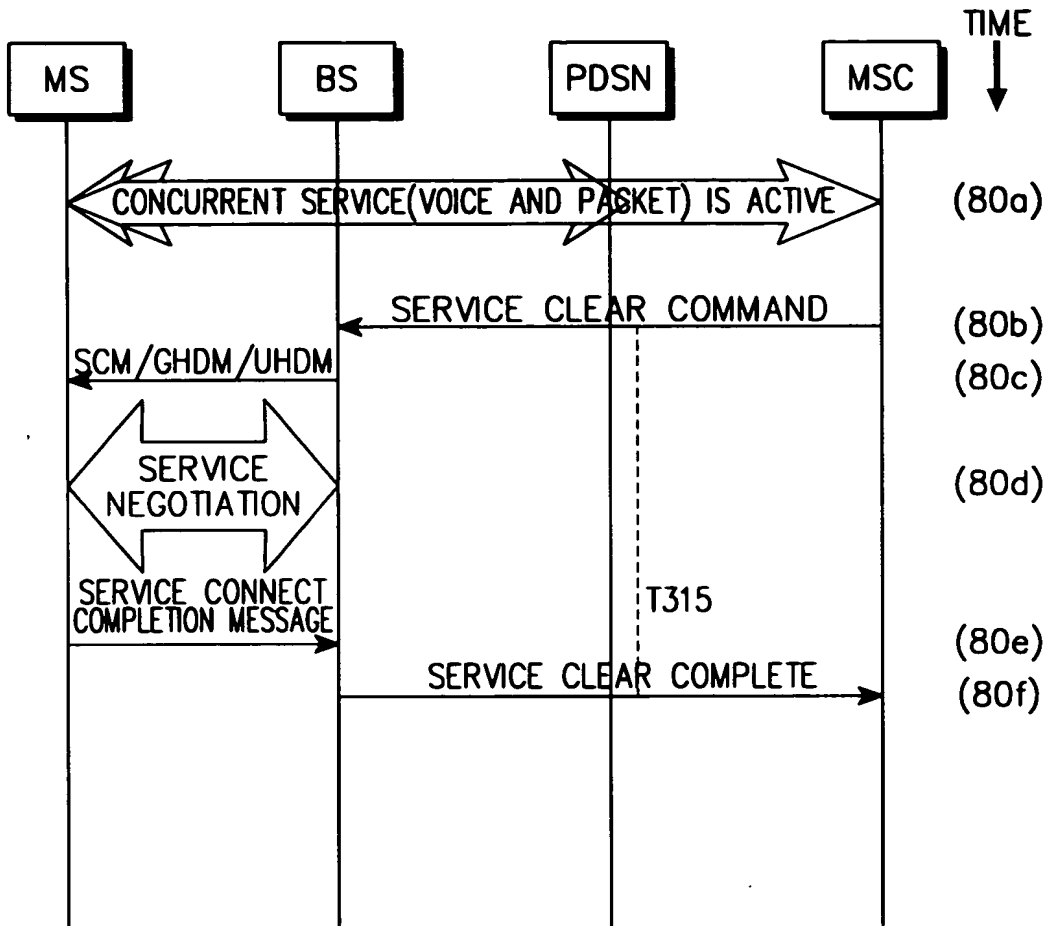


FIG. 11C



INFORMATION ELEMENT
MESSAGE TYPE
CAUSE
SERVICE OPTION CONNECTION REFERENCE
CAUSE LAYER 3

FIG. 12

7	6	5	4	3	2	1	0	Octet
BSMAP HEADER: MESSAGE DISCRIMINATION = [xxH]								1
LENGTH INDICATOR (LI) = [xxH]								2
MESSAGE TYPE = [xxH]								1
CAUSE: A1 ELEMENT IDENTIFIER = [04H]								1
LENGTH = [01H]								2
ext=[0] CAUSE VALUE = [00H(RADIO INTERFACE MESSAGE FAILURE), 01H(RADIO INTERFACE FAILURE), 07H (OAM&P INTERVENTION), 09H (CALL PROCESSING INCLUDING CONCURRENT SERVICE PROCESSING), 10H(PACKET CALL GOING DORMANT), 0DH(TIMER EXPIRED), 20H(EQUIPMENT FAILURE) 60H(PROTOCOL ERROR BETWEEN BS AND MSC) 72H(MS-TO-IWF TCP CONNECTION FAILURE), 73H(ATHO(MODEM HANG UP)COMMAND), 74H(+FSH/+FHNG(FAX SESSION ENDED)COMMAND), 75H(NO CARRIER) 76H(PPP PROTOCOL FAILURE), 77H(PPP SESSION CLOSED BY THE MS) ]								3

FIG. 13A

SERVICE OPTION CONNECTION REFERENCE: A1 ELEMENT IDENTIFIER=[xxH]			1
LENGTH=[07H]			2
RESERVED=[0000000]		SOC_N UM=0	3
(MSB)	SERVICE OPTION 1		4
=[8000H(13K SPEECH), 0011H(13K HIGH RATE VOICE SERVICE), 0003H(EVRC), 801FH(13K MARKOV), 0009H(13KK LOOPBACK), 0004H(Async DATA RATE Set 1), 0005H(G3 FAX RATE Set 1), 000CH(Async DATA RATE Set 2), 000DH(G3 FAX RATE Set 2), 0006H(SMS RATE Set 1), 000EH(SMS RATE Set 2), 0021H(PACKET DATA), 0012H(OTAPA RATE Set 1), 0013H(OTAPA RATE Set 2) ]		(LSB)	5
(MSB)			6
SERVICE OPTION 1 CONNECTION REFERENCE=<ANY VALUE>			7
			8
		(LSB)	9
CAUSE LAYER 3: A1 ELEMENT IDENTIFIER = [08H]			1
LENGTH = [02H]			2
ext=[1]	CODING STANDARD =[00](Q.931)	RESERVED =[0]	LOCATION = [0100] (PUBLIC NETWORK SERVING THE REMOTE USER)
ext=[1]	CAUSE VALUE = [10H (NORMAL CLEARING), 1FH(NORMAL UNSPECIFIED)]		4

FIG. 13B

INFORMATION ELEMENT
MESSAGE TYPE
CAUSE
SERVICE OPTION CONNECTION REFERENCE
CAUSE LAYER 3

FIG. 14

7	6	5	4	3	2	1	0	Octet
BSMAP HEADER: MESSAGE DISCRIMINATION = [xxH]								1
LENGTH INDICATOR (LI) = [xxH]								2
MESSAGE TYPE = [xxH]								1
CAUSE: A1 ELEMENT IDENTIFIER = [04H]								1
LENGTH = [01H]								2
ext=[0]	CAUSE VALUE = [00H(RADIO INTERFACE MESSAGE FAILURE), 01H(RADIO INTERFACE FAILURE), 07H (OAM & P INTERVENTION), 09H (CALL PROCESSING INCLUDING CONCURRENT SERVICE PROCESSING), 10H(PACKET CALL GOING DORMANT), 0DH(TIMER EXPIRED), 20H(EQUIPMENT FAILURE) 60H(PROTOCOL ERROR BETWEEN BS AND MSC) 72H(MS-TO-IWF TCP CONNECTION FAILURE), 73H(ATHO(MODEM HANG UP)COMMAND), 74H(+FSH/+FHNG(FAX SESSION ENDED)COMMAND), 75H(NO CARRIER) 76H(PPP PROTOCOL FAILURE), 77H(PPP SESSION CLOSED BY THE MS) ]							3

FIG. 15A

SERVICE OPTION CONNECTION REFERENCE: A1 ELEMENT IDENTIFIER=[xxH]			1
LENGTH=[07H]			2
RESERVED=[0000000]		SOC_N UM=0	3
(MSB)	SERVICE OPTION 1		4
=[8000H(13K SPEECH), 0011H(13K HIGH RATE VOICE SERVICE), 0003H(EVRC), 801FH(13K MARKOV), 0009H(13K LOOPBACK), 0004H(Async DATA RATE Set 1), 0005H(G3 FAX RATE Set 1), 000CH(Async DATA RATE Set 2), 000DH(G3 FAX RATE Set 2), 0006H(SMS RATE Set 1), 000EH(SMS RATE Set 2), 0021H(PACKET DATA), 0012H(OTAPA RATE Set 1), 0013H(OTAPA RATE Set 2) ]		(LSB)	5
(MSB)			6
SERVICE OPTION 1 CONNECTION REFERENCE=<ANY VALUE>			7
			8
			(LSB)
			9
CAUSE LAYER 3: A1 ELEMENT IDENTIFIER = [08H]			1
LENGTH = [02H]			2
ext=[1]	CODING STANDARD =[00](Q.931)	RESERVED =[0]	LOCATION = [0100] (PUBLIC NETWORK SERVING THE REMOTE USER)
ext=[1]	CAUSE VALUE = [10H (NORMAL CLEARING), 1FH(NORMAL UNSPECIFIED)]		4

FIG. 15B

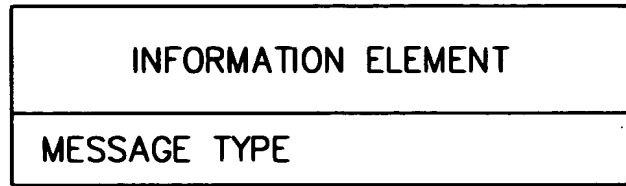


FIG. 16

7	6	5	4	3	2	1	0	Octet
BSMAP HEADER: MESSAGE DISCRIMINATION = [00H]								1
LENGTH INDICATOR (LI) = [01H]								2
MESSAGE TYPE = [xxH]								1

FIG. 17